

COMMERCIAL FERTILIZERS

REPORT FOR 1944

E. M. BAILEY
Chemist in Charge



Connecticut
Agricultural Experiment Station
New Haven

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E. M. BAILEY
*Chemist in Charge**

SOME EARLY FERTILIZER LAWS

State control of commercial fertilizers came about as a result of educational work carried on by pioneer agricultural chemists among whom, in this country, S. W. Johnson, later and for many years director of this Station, was a recognized leader. The broad objective which these early chemists had was the advancement of agriculture through the application of chemistry and related sciences to agricultural problems generally. Commercial fertilizers, then relatively new on the market, afforded an appropriate and timely opportunity to demonstrate the worth of that thesis. Beginning about 1850, chemical analysis of fertilizers received much attention as a means of evaluating these new commodities. Such analyses served as a guide to an intelligent choice of brands, and they protected the buyer against unwarranted claims for worthless or inferior products.

It was not long before fertilizer manufacturers came to appreciate the advantages in having their products measure up to chemical tests and in selling them on the basis of guaranteed analyses. Such a plan enhanced public confidence and good will, and it fortified the manufacturer against the competition of worthless goods. So it is fair to say that the fertilizer industry played a large part in bringing about suitable legislation to control the merchandizing of its products.

We are not certain as to which state may properly claim to have enacted the first fertilizer law. Vietch¹ in a review of early legislation in Maryland points out that the first laws related to unmixed goods such as lime, guano and plaster Paris. He cites a lime inspection law in Massachusetts enacted in 1785, and similar laws relating to lime and plaster Paris in Maryland in 1833; to lime and guano in Virginia in 1852; and to the same materials in Pennsylvania in 1860.

The process of preparing superphosphate by treating bones with sulphuric acid, proposed by Liebig in 1840 and applied to mineral phosphates by Lawes in 1842, provided the basis for the commercial fertilizer industry. Ross² remarks that the discovery of phosphate deposits in South Carolina in 1862, and later of similar deposits in Florida and Tennessee, stimulated the growth of this important commercial enterprise in this country. Superphosphate supplemented with nitrogenous materials and potash salts became commercial articles

*Analyses reported in this bulletin were made by Messrs. Nolan, Merwin and Walden; microscopic examinations by Miss Shepard; inspection and sampling by Mr. George Smith; and compilations by Mrs. Vosburgh.

¹Jour. Association Official Agricultural Chemists, 17, 3, 474 (1934).

²Chemistry in Agriculture, Chamberlain and Browne, the Chemical Foundation, Inc., New York, N. Y.

known as "complete" fertilizers, so called because they supplied the three major items of plant food, nitrogen, phosphoric acid and potash. Such mixtures date probably from about the middle of the 19th century.

A Massachusetts law broad enough to regulate the manufacture and sale of mixed fertilizers was enacted in 1869. That statute has frequently been cited as the first of its kind and scope in the United States, although a similar law was enacted in Connecticut in the same year. However, Vietch, without claiming priority for his state, cites a Maryland law passed in 1868 that enlarged the scope of existing legislation to include commercial mixtures. Whether there was legislation elsewhere of earlier date can be learned only by searching the records of other states.

It should be remarked in passing that these early statutes were inadequate in one way or another and amendments from time to time were necessary to make them serve the purpose intended. At the present time fertilizer laws are in effect in all of the 48 states, with one exception, and the basic provisions of them all are essentially the same.

Through the efforts of the Association of Official Agricultural Chemists over many years (since 1884), uniform and improved methods of analysis have been made available for official control work; and much has been accomplished also to bring about a common understanding of the identities of various fertilizer materials, and uniformity in the interpretation of the results of fertilizer analysis. In all of this the fertilizer industry has given continued and helpful cooperation.

CONNECTICUT LAW AND REGULATIONS REGARDING COMMERCIAL FERTILIZERS

The term "commercial fertilizers" as used in the Connecticut fertilizer statute includes any and every substance imported, manufactured, prepared or sold for fertilizing or manuring or soil amendment purposes, except barnyard manure and stable manure that have not been artificially treated or manipulated, marl and lime.

The seller is responsible for the proper labelling of each package of fertilizer, for the registration of each brand sold or offered for sale, for the payment of the required analysis fee and for the payment of the tonnage tax. If, however, proper labelling, registration and payments of analysis fees and of tonnage tax have been provided for by the manufacturer or by another responsible person, all sellers of such brands are released from the above-mentioned requirements. The retailer, therefore, should assure himself that the requirements of the law have been met by the manufacturer of the brands which he handles, or himself be prepared to meet all these requirements.

It frequently happens that a manufacturer or jobber sells fertilizer materials which are the products of, and which are registered

by, another firm or individual. Distributors in such cases should sell such materials by the exact brand names under which they are registered in order that there may be no mistake as to the identity of brands. Any change in the brand names, or failure to make the identity of the brand and its manufacturer clear, makes the distributor liable for the registration of the product as his own brand.

The law exempts from registration, and from other requirements referred to, only (1) fertilizers passing through the State in transit; (2) fertilizers and fertilizer materials shipped to regular fertilizer factories to be used for manufacturing purposes, and (3) fertilizers and fertilizer chemicals sold to the Connecticut Agricultural Experiment Station for experimental purposes.

Cottonseed, linseed and soybean meals, when sold or used for fertilizer purposes, must be registered as fertilizers and the specified fees paid thereon. For such products the registration fee is \$10.00 for each brand payable annually, and six cents per ton tonnage fee, payable semi-annually.

These fees are entirely apart from those required by the feeding stuffs statute.

Because manufacturers or jobbers do not know how much, if any, of their brands are sold or used as fertilizers, local dealers and purchasers report their sales or purchases to this Station. The information is not for publication but is used to inform manufacturers of the total sales of their brands as fertilizer in this State. It is expected that the fees provided for by statute will be paid by the manufacturer or other party responsible for the brands.

OFFICIAL DEFINITIONS OF FERTILIZER TERMS AND MATERIALS¹

An acid-forming fertilizer is one that is capable of increasing the residual acidity of soil.

A non-acid-forming fertilizer is one that is not capable of increasing the residual acidity of the soil.

Acidulated fish tankage or acidulated fish scrap is the rendered product derived from fish and treated with sulfuric acid.

Activated sewage products are those made from sewage freed from grit and coarse solids and aerated after being inoculated with microorganisms. The resulting flocculated organic matter is withdrawn from the tanks, filtered with or without the aid of coagulants, dried, ground and screened.

Agricultural liming material is material whose calcium and magnesium content is capable of neutralizing soil acidity.

Air-slaked lime is a product composed of varying proportions of the oxide, hydroxide and carbonate of calcium, or of calcium and magnesium, and derived from exposure of quicklime.

¹Cited from Methods of Analysis, 5th Ed. 1940, Association Official Agricultural Chemists.

Ammoniated superphosphate is the product obtained when superphosphate is treated with ammonia or with a solution containing free ammonia and other forms of nitrogen dissolved therein.

The word *analysis*, as applied to fertilizers, shall designate the percentage composition of the product expressed in those terms that the law requires and permits.

Ashes from leached wood are unleached ashes resulting from burning wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

Available phosphoric acid is the sum of the water-soluble and the citrate-soluble phosphoric acid.

"Basic" lime phosphate (lime-based superphosphate) is a superphosphate to which liming materials have been added in a quantity at least six per cent (6%) calcium carbonate equivalents in excess of the quantity required to convert all water-soluble phosphate to the citrate-soluble form.

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of materials other than what results in the original process of manufacture. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis, II, 67 or 68. Any phosphate slag not conforming to this definition shall be designated *low grade*.

Bat guano is partially decomposed bat manure.

Bat manure is the dry excrement from bats.

A *brand* is a term, design or trademark used in connection with one or several grades of fertilizers.

A *brand name* is a specific designation applied to an individual fertilizer.

Calcium nitrate (nitrate of lime) is a commercial product consisting chiefly of calcium nitrate, and it shall contain not less than fifteen per cent (15%) of nitrogen.

Citrate-soluble ("reverted") phosphoric acid is that part of the total phosphoric acid in fertilizer that is insoluble in water but soluble in a solution of citrate of ammonia according to the method adopted by the Association of Official Agricultural Chemists.

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods below fifty per cent (50%) and eighty per cent (80%) respectively.

Cyanamid is a commercial product composed chiefly of calcium cyanamide (CaCN_2), and it shall contain not less than twenty-one per cent (21%) of nitrogen.

Dicalcium phosphate is a manufactured product consisting chiefly of a dicalcic salt of phosphoric acid.

Dissolved bone is ground bone or bone meal that has been treated with sulfuric acid.

Dolomite is a mineral composed chiefly of carbonates of magnesium and calcium in substantially unimolal (1-1.19) proportions.

Dried blood is the collected blood of slaughtered animals, dried and ground and containing not less than twelve per cent (12%) of nitrogen in organic forms.

Dried, pulverized, or shredded manures are what the name indicates, and not mixtures of manures and other materials.

Fertilizer grade shall represent the minimum guaranty of its plant food expressed in terms of *nitrogen (not ammonia)*, *available phosphoric acid*, and *water-soluble potash*.

Fish tankage, fish scrap, dry ground fish or fish meal fertilizer grade, is the dried ground product derived from rendered or unrendered fish.

Garbage tankage is the rendered, dried and ground product derived from waste household food materials.

Pulverized limestone (fine-ground limestone) is the product obtained by grinding either calcitic or dolomitic limestone so that all the material will pass a 20-mesh sieve and at least seventy-five per cent (75%) will pass a 100-mesh sieve.

Ground limestone (coarse-ground limestone) is the product obtained by grinding either calcitic or dolomitic limestone so that all the material will pass a 10-mesh sieve, and at least fifty per cent (50%) will pass a 100-mesh sieve.

Ground shells is the product obtained by grinding the shells of mollusks so that not less than fifty per cent (50%) shall pass a 100-mesh sieve. The product shall also carry the name of the mollusk from which said product is made.

Ground shell marl is the product obtained by grinding natural deposits of shell marl so that at least seventy-five per cent (75%) shall pass a 100-mesh sieve.

Ground raw bone is dried ground animal bones that have not been steamed previously under pressure.

Ground steamed bone is ground animal bones that have been steamed previously under pressure.

Gypsum, land plaster and crude calcium sulfate are products consisting chiefly of calcium sulfate. They may contain twenty per cent (20%) of combined water. (They do not neutralize acid soils.)

High calcic products are materials of which ninety per cent (90%) or more of the total calcium and magnesium content consists of calcium oxide.

High magnesian products are materials in which more than ten per cent (10%) of the total calcium and magnesium oxide consists of magnesium oxide.

Hoof and horn meal is processed, dried, ground hoofs and horns.

Hydrated or slaked lime is a dry product consisting chiefly of the hydroxide of calcium and oxide-hydroxide of magnesium.

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

Leached wood ashes are ashes from burned unleached wood with part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

The word *lime* when applied to liming materials means either calcium oxide or calcium and magnesium oxides.

Manganese. The water-soluble (or available) manganese in fertilizers shall be expressed as manganese (Mn).

Manganese sulfate. The term manganese sulfate, when applied to an ingredient of a mixed fertilizer, shall designate anhydrous managanous sulfate ($MnSO_4$).

Manure salts are potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term *double manure salts* should be discontinued.

Monoammonium phosphate (fertilizer grade) is a commercial salt made by combining phosphoric acid with ammonia. It shall contain not less than ten per cent (10%) of nitrogen and not less than forty-six per cent (46%) of available phosphoric acid.

Muriate of potash (commercial potassium chloride) is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as chlorides.

Nitrate of potash (commercial potassium nitrate) is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

Nitrate of soda (commercial sodium nitrate) is commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

Peat is a partly decayed vegetable matter of natural occurrence. It is composed chiefly of organic matter that contains some nitrogen of low activity.

Charred peat is peat artificially dried at a temperature that causes partial decomposition.

Phosphate rock is a natural rock containing one or more calcium phosphate minerals of sufficient purity and quantity to permit its use, either directly or after concentration, in the manufacture of commercial products.

The term *phosphoric acid* designates phosphorus pentoxide (P_2O_5).

The term *potash* designates potassium oxide (K_2O).

Precipitated bone phosphate is a by-product from the manufacture of glue from bones and is obtained by neutralizing the hydrochloric acid solution of processed bone with calcium hydroxide. The phosphoric acid is chiefly present as dicalcium phosphate.

Precipitated phosphate is a product consisting mainly of dicalcium phosphate obtained by neutralizing with calcium hydroxide the acid solution of either phosphate rock or processed bone.

Primary fertilizer components are those at present generally recognized by law as necessary to be guaranteed in fertilizers, namely: nitrogen, phosphoric acid (P_2O_5), and potash (K_2O).

Secondary fertilizer components are those other than the "primary fertilizer components" that are essential to the proper growth of plants and that may be needed by some soils. Some of these components are calcium, magnesium, sulfur, manganese, copper, zinc and boron.

Process tankages are products made under steam pressure from crude inert nitrogenous materials, with or without the use of acids, for the purpose of increasing the activity of the nitrogen. These products shall be called "Process Tankages" with or without further qualification. The water-insoluble nitrogen in these products shall test at least fifty per cent (50%) active by the alkaline, or eighty per cent (80%) by the neutral permanganate method.

Products secured by heating calcium phosphate with alkali salts containing potash are non-acid phosphates with potash. They are not potassium phosphate.

Quick lime, burned lime, caustic lime, lump lime, unslaked lime. These designations shall apply to calcined materials, the major part of which is calcium oxide, in natural association with a lesser amount of magnesium oxide, and which is capable of slaking with water.

Sheep manure—wool waste is the by-product from wool-carding establishments consisting chiefly of sheep manure, seeds, and wool fiber.

Soft phosphate with colloidal clay is a very finely divided low-analysis by-product from mining Florida rock phosphate by a hydraulic process in which the colloidal materials settle at points in artificial ponds and basins farthest from the washer, and are later removed after the natural evaporation of the water.

Sulfate of ammonia (commercial ammonium sulfate) is a commercial product composed chiefly of ammonium sulfate. It shall contain not less than twenty and five-tenths per cent (20.5%) of nitrogen.

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and one-half per cent (2.5%) of chlorine.

Sulfate of potash (commercial potassium sulfate) is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O) chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

Superphosphate is a commercial phosphate, the phosphoric acid (P_2O_5) content of which is due chiefly to monocalcium phosphate. (The grade that shows the available phosphoric acid should always be used as a prefix to the name. Example: 16 per cent superphosphate).

Tankage (without qualification) is the rendered, dried and ground by-product, largely meat and bone from animals (that have been slaughtered or have died otherwise).

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

Unleached wood ashes are ashes from burned unleached wood that have had no part of their plant food removed and that contain four per cent (4%) or more of water-soluble potash (K_2O).

Waste lime, by-product lime, is any industrial waste or by-product containing calcium or calcium and magnesium in forms that will neutralize acids. It may be designated by prefixing the name of the industry or process by which it is produced, i.e., gas-house lime, tanners' lime, acetylene lime-waste, lime-kiln ashes, calcium silicate, etc.

REGISTRATIONS

Late Registrations for 1943

To the brands registered for 1943 in our last report should be added:

Swift & Co. Fertilizer Works, A Division of Swift & Co., Baltimore, Md.

Vigoro Victory Garden Fertilizer—For Food Production Only 5-10-5

Registrations for 1944

For 1944, 42 firms and individuals registered 203 brands of fertilizers at this Station for sale in the State. As required by statute, the brands are listed as follows:

Acme Guano Co., Baltimore 2, Md.

Acme 3-12-6
Acme 5-8-7
Acme 5-10-5 Victory Garden
Acme 7-7-7
Acme 5-10-10

Ted Alkire, Lubbock, Tex.

Kireal Cotton Hull Ash

**Allied Chemical & Dye Corp., 40 Rec-
tor St., New York 6, N. Y.**

Arcadian, The American Nitrate of
Soda
Arcadian Sulphate of Ammonia
Sulphate of Ammonia

**American Agricultural Chemical Co.,
North Weymouth, Mass.**

AA Quality Fertilizer 5-8-7
Agrico for Corn 3-12-6
Agrico for Gardens (Victory Garden
Fertilizer) (For Food Production
Only) 5-10-5
Agrico for Lawns, Trees and Shrubs
6-10-4
Agrico for New England 5-8-7
Agrico for Potatoes 5-10-10
Agrico for Tobacco 6-3-6
Agrico for Top Dressing 7-7-7
18% Normal Superphosphate
Sheep Manure

**American Cyanamid Co., 30 Rocke-
feller Plaza, New York 20, N. Y.**

20.6% 'Aero' Cyanamid Granular
21% 'Aero' Cyanamid Pulverized

**American Potash & Chemical Corp.,
70 Pine St., New York, N. Y.**

Trona Muriate of Potash—60% K_2CO_3

**Apothecaries Hall Co.,
Waterbury, Conn.**

Bone Meal
Castor Pomace
Cotton Hull Ashes—unit basis
Dry Ground Fish
Liberty Fertilizer 0-14-14
Liberty Fertilizer 3-12-6
Liberty Fertilizer 4-10-0
Liberty Fertilizer 5-3-5
Liberty Fertilizer 5-8-7
Liberty Fertilizer 5-10-10
Liberty Fertilizer 6-3-6

Liberty Fertilizer 7-7-7

Liberty Green Gro Fertilizer (For
Lawns, Flowers, Shrubs and Trees)
6-7-4

Liberty Victory Garden Fertilizer
5-10-5

Muriate of Potash

Precipitated Bone

Sheep Manure

Sulphate Ammonia

Superphosphate 20%

**Armour Fertilizer Works, 120 Broad-
way, New York 5, N. Y.**

Armour's Big Crop Fertilizer 3-12-6
Armour's Big Crop Fertilizer 5-8-7
Armour's Big Crop Fertilizer 5-10-5
Armour's Big Crop Fertilizer 5-10-10
Armour's Big Crop Fertilizer 7-7-7
Armour's Big Crop Superphosphate
20%
Armour's Big Crop Tobacco Special
5-3-5
Armour's Big Crop Tobacco Special
6-3-6
Armour's Special Ornamental
Fertilizer 6-12-4
Armour's Victory Garden Fertilizer
5-10-5
Muriate of Potash 60%

Ashcraft-Wilkinson Co., Atlanta, Ga.

Fertilizer Compound Containing
Ammonium Nitrate
Gilt Edge Brand, 41% Protein, Soya
Bean Meal
Imported Cottonseed Meal

**Associated Seed Growers, Inc.,
New Haven, Conn.**

Clark's Tip Top Fertilizer 5-8-7

**Atkins & Durbrow, Inc.,
165 John St., New York, N. Y.**

Driconure
O. K. Manure

**F. A. Bartlett Tree Expert Co.,
Stamford, Conn.**

Bartlett Green Tree Food 4-8-6

**The Baugh & Sons Co., Calvert and
Water Sts., Baltimore 2, Md.**

Baugh's Advanced Growers Special
5-8-7

Baugh's Perfection Brand 3-12-6
 Baugh's Premium Plant Food and Soil
 Builder 5-10-5
 Baugh's Raw Bone Meal
 Baugh's 20% Superphosphate
 Baugh's Truckers Favorite 5-10-5
 Baugh's Victory Garden Fertilizer for
 Food Production Only 5-10-5

**The Berkshire Chemical Co., 92 How-
 ard Ave., Bridgeport 5, Conn.**

Berkshire 0-14-14 (5 Units Potash
 from Sul. Potash)
 Berkshire Fertilizer 3-12-6
 Berkshire Fertilizer, Specialty Ferti-
 lizer, 4-10-2
 Berkshire Fertilizer 5-8-7
 Berkshire Fertilizer 5-10-5
 Berkshire Fertilizer Victory Garden
 5-10-5
 Berkshire Fertilizer 5-10-10
 Berkshire 5-10-10 (Potash from
 Sulphate)
 Berkshire Fertilizer 6-3-6 Tobacco
 Berkshire Sheep Manure

**Chilean Nitrate Sales Corp.,
 120 Broadway, New York 5, N. Y.**

Chilean Nitrate of Soda —
 Champion Brand
 Chilean Nitrate of Soda —
 Original Old Style

**Consolidated Chemical Industries,
 Inc., Woburn, Mass.**

Digesta-Bone (Fertilizer)

**Consolidated Rendering Co., 178 At-
 lantic Ave., Boston 10, Mass.**

Corenco 0-14-14 Top Dresser
 Corenco 3-12-6 Animal Brand
 Corenco 5-8-7 Potato and General
 Crop
 Corenco 5-10-5 Victory Garden
 Fertilizer
 Corenco 5-10-10 Peerless Potato
 Corenco 6-3-6 Special Tobacco
 Grower
 Corenco 6-8-2 Landscape Fertilizer
 Corenco 7-7-7 Complete Fruit and
 Top Dressing
 Corenco Sheep Manure
 Corenco Superphosphate 20%

**Davison Chemical Corp.,
 Baltimore, Md.**

Davco Granulated 20% Superphosphate

**E. I. du Pont de Nemours and Co.,
 (Inc.) Wilmington, Del.**

"Uramon" Fertilizer Compound

**Eastern States Farmers' Exchange,
 West Springfield, Mass.**

Eastern States 0-10-20 W/Borax
 Eastern States 0-20-20
 Eastern States 5-10-5 VG
 (Victory Garden)
 Eastern States 5-10-10
 Eastern States 5-15-20
 Eastern States 5-17-0
 Eastern States 8-4-8 Tobacco
 Eastern States 8-8-8
 Eastern States 8-16-8
 Eastern States 8-16-16
 Eastern States 8-16-16 LC
 (Low Chlorine)
 Eastern States 10-10-10
 Eastern States Castor Pomace
 Eastern States Cottonhull Ash
 Eastern States Ground Steamed Bone
 Eastern States Muriate of Potash
 Eastern States Sulphate of Potash
 Eastern States Superphosphate—
 Pulverized — 20%
 Eastern States Superphosphate—47%

**Humphreys-Godwin Co.,
 Memphis, Tenn.**

Dixie Brand 41% Protein Prime
 Cottonseed Meal

**Spencer Kellogg & Sons, Inc.,
 Buffalo 5, N. Y.**

Castor Pomace

L. B. Lovitt & Co., Memphis, Tenn.

"Lovit Brand" 41% Protein
 Cottonseed Meal

**Maxton Oil & Fertilizer Co.,
 Maxton, N. C.**

"Mofco" Brand Cottonseed Meal

**Norwood Brand Fertilizer Co.,
 No. Reading, Mass.**

Norwood Brand Sheep Manure

**Old Deerfield Fertilizer Co., Inc.,
 South Deerfield, Mass.**

Old Deerfield 5-8-7
 Old Deerfield 5-10-5
 Old Deerfield 5-10-10
 Old Deerfield 6-3-6
 Old Deerfield 7-7-7
 Old Deerfield Castor Pomace
 Old Deerfield Cotton Hull Ashes
 Old Deerfield Double Sulfate of
 Potash Magnesia
 Old Deerfield Hoof and Horn Meal

**Olds & Whipple, Inc.,
 Hartford, Conn.**

O & W 0-14-14 Fertilizer
 O & W 3-12-6 Corn Fertilizer

- O & W 5-3-5 Complete Tobacco Fertilizer
- O & W 5-3-5 Complete Tobacco Fertilizer Potash derived from Cotton Hull Ash
- O & W 5-8-7 Potato and General Purpose Fertilizer
- O & W 5-8-7 Potato and General Purpose Fertilizer with Sulphate of Potash
- O & W 5-10-5 Victory Garden Fertilizer
- O & W 5-10-10 Potato Fertilizer
- O & W 5-10-10 Potato Fertilizer with Sulphate of Potash
- O & W 6-3-6 Blue Label Tobacco Fertilizer
- O & W 6-3-6 Blue Label Tobacco Fertilizer Potash derived from Cotton Hull Ash
- O & W 7-7-7 Top Dressing and Grass Fertilizer
- O & W Bone Meal
- O & W Castor Pomace
- O & W Cotton Hull Ash
- O & W Menhaden Dry Ground Fish
- O & W Superphosphate
- O & W Sulphate of Potash 48%
- O & W Triple Superphosphate

The Pulverized Manure Co., 503 Exchange Bldg., Union Stock Yards, Chicago, Ill.

Wizard Brand Cow Manure
Wizard Brand Pulverized Sheep Manure

The Rogers & Hubbard Co., Portland, Conn.

- Gro-Fast Plant Food 5-8-5
- Gro-Fast Sheep Manure
- Gro-Fast Strictly Bone Meal
- Hubbard Bone Meal
- Hubbard Castor Pomace
- Hubbard Climax Tobacco Fertilizer 5-3-5
- Hubbard Cotton Hull Ash
- Hubbard Dry Ground Fish
- Hubbard Edible Steamed Bone
- Hubbard High Potash Fertilizer 5-10-10
- Hubbard Muriate of Potash - 60%
- Hubbard Potato Fertilizer 5-8-7
- Hubbard Raw Knuckle Bone Flour
- Hubbard 20% Superphosphate
- Hubbard Tobacco Grower 6-3-6
- Red H Brand 0-14-14
- Red H Brand 3-12-6
- Red H Brand 5-8-7
- Red H Brand 5-10-10
- Red H Brand 7-7-7
- Victory Garden Fertilizer 5-10-5

Ruhm Phosphate & Chemical Co., Mt. Pleasant, Tenn.
"Red Seal Brand Ruhm's Phosphate Rock 30%"

O. M. Scott & Sons Co., Marysville, Ohio
Scott's Garden Builder 5-10-5
Scott's Turf Builder 8-7-3

Sears, Roebuck & Co., Chicago, Ill.
Garden Master Specialty 5-8-7
Garden Master Victory Garden 5-10-5

Sewerage Commission of the City of Milwaukee, Milwaukee 1, Wis.
Milorganite

M. L. Shoemaker Co., Inc., Philadelphia, Pa.
Shoemaker's "Swift-Sure" Tobacco Starter 4-10-0

Stumpp & Walter Co., 132 Church St., New York 8, N. Y.

- Sawco Bone Fertilizer 2.47 - 24.00
- Sawco Emerald Grass Fertilizer 5-7-3
- Sawco General Garden Fertilizer 5-10-5
- Sawco Pulverized Sheep Manure 2-1-2
- Sawco Superphosphate 20%
- Sawconure 2-1-1

Summers Fertilizer Co., Inc., Baltimore, Md.

- "Summers" 0-14-14 Fertilizer
- "Summers" 5-8-7 Fertilizer
- "Summers" 5-10-5 Fertilizer

Swift & Co. Fertilizer Works, Baltimore, Md.

- Swift's Pulverized Sheep Manure
- Swift's Red Steer 3-12-6
- Swift's Red Steer Fertilizer 5-8-7
- Swift's Red Steer Superphosphate 0-20-0
- Vigoro 4-12-4
- Vigoro Victory Garden Fertilizer—For Food Production Only 5-10-5

Tennessee Corp., Lockland 15, Ohio
5-10-5 Loma

I. P. Thomas & Son Co., 721 Market St., Camden, N. J.

- I. P. Thomas 5-8-7
- Soil-Rich Victory Garden Fertilizer 5-10-5
- 20% Superphosphate
- Tip Top Fertilizer 3-12-6

Walker-Gordon Laboratory Co.,
Plainsboro, N. J.
Bovung

F. H. Woodruff & Sons, Inc.,
Milford, Conn.
Gros-Sod Lawn Food 6-8-2

Woodruff Fertilizer Works, Inc.,
North Haven, Conn.
Castor Pomace

Woodruff's 0-14-14
Woodruff's 3-12-6 Fertilizer
Woodruff's 5-8-7 Fertilizer
Woodruff's 5-10-5 Fertilizer Victory
Garden
Woodruff's 5-10-10 Fertilizer
Woodruff's Superphosphate 18%
Woodruff's Tobacco Fertilizer 6-3-6

INSPECTION OF 1944

To effect a more economical use of fertilizer materials for agricultural use and to conserve fertilizer chemicals, especially nitrogenous materials, for the manufacture of munitions, the number of mixed fertilizer grades has been greatly reduced for the past two years. "Approved" grades have been selected to meet the agricultural needs of various states.

Food Production Order No. 5, revised, as of July 13, 1943, issued by the Food Production Administration, designated the grades for use in Connecticut in 1943-44. A revision of that order, War Food Order No. 5, June 30, 1944, designated the grades for use in 1944-45. The grades approved for both periods are as follows:

1943-44	1944-45
0-14-14	0-10-20
3-12- 6	0-14-14
4-10- 0 ¹	4-10- 0 ⁴
5- 3- 5 ^{1, 2}	4-12- 4
5- 8- 7 ²	4-12- 8
5-10- 5 ³	4-12-16
5-10-10	5- 3- 5 ^{1, 3}
6- 3- 6	5- 5-15 ³
7- 7- 7	5- 8- 7 ¹
	5-10- 5 ²
	5-10-10
	6- 3- 6 ³
	7- 7- 7

¹ Tobacco only

² No multiples permitted

³ For victory gardens

¹ No multiples permitted

² Victory garden fertilizer

³ Tobacco only

⁴ Tobacco plant beds

A manufacturer may make one grade of mixed specialty (non-food use) fertilizer of unapproved grade for sale under his own brand name; and one grade of such fertilizer for any other person who may purchase it for resale.

Certain chemicals and base materials to be used as such, or in mixtures, are approved for all states. The list as approved for 1944-45 is as follows:

Nitrate of soda	16-0-0
By-product nitrate of soda	14-0-0
Nitrate of potash	14-0-14
Sulphate of ammonia	20 (or higher)-0-0

Cyanamid	20 (or higher)-0-0
Uramon	42-0-0
Ammoniated superphosphate	4 (or higher)-16 (or higher)-0
Ammonium phosphate	11-48-0
Ammonium phosphate-sulphate	16-20-0
Cal-nitro	20 (or higher)-0-0
A-N-L	20 (or higher)-0-0
Ammonium nitrate	30 (or higher)-0-0
Potassium nitrate	14-0-44 (or higher)
Superphosphate	0-18 (or higher)-0
Muriate of potash	0-0-50 (or higher)
Sulphate of potash	0-0-48 (or higher)
Manure salts	0-0-22 (or higher)
Sulphate of potash-magnesia	0-0-18 (or higher)
Potash lime	0-0-6
Ground phosphate rock	Any Grade
Colloidal phosphate	Any Grade
Cotton hull ash	Any Grade
Wood ash	Any Grade
Straight carriers of organic nitrogen	

A classification of fertilizers examined and the tonnage of each is given in tabular form on page 18. The tonnage figures do not include fertilizer materials distributed under the Federal Agricultural Adjustment Program; they do include fertilizer materials distributed by agents of the War Food Administration.

CLASSIFICATION OF FERTILIZER MATERIALS AND FERTILIZER TONNAGE
(July 1, 1943, to June 30, 1944)

	Page Number	Number of Samples	Tonnage
<i>I. Containing Chiefly Nitrogen</i>			
Nitrate of soda	23	4	1,891
Ammonium sulphate	23	2	34
Ammonium nitrate, fertilizer com- pound	23	3	297
Castor pomace	24	20	3,550
Cottonseed meal	24	46	7,064
Soybean meal	300
Uramon	23	6	174
Cyanamid	28
Horn and hoof meal	24	3	93
			<hr/> 13,431
<i>II. Containing Chiefly Phosphoric Acid</i>			
Superphosphate, 18%	536
Superphosphate, 20%	25	17	4,348
Superphosphate, 47%	39
Precipitated bone	25	6	298
Rock phosphate	1
			<hr/> 5,222
<i>III. Containing Chiefly Potash</i>			
Muriate of potash	26	4	432
Sulphate of potash and potash- magnesia	3 ¹	89
Cottonhull ashes	26	11	1,679
Wood ashes	1 ¹
			<hr/> 2,200
<i>IV. Containing Nitrogen and Phosphoric Acid</i>			
Dry ground fish	28	9	718
Ground bone	28	15	930
Milorganite and digesta-bone	29	2	176
			<hr/> 1,824
<i>V. Mixed fertilizers</i>			
Commercial mixtures	30	116	51,739 ²
Home and special mixtures	38	69
			<hr/> 51,739
<i>VI. Miscellaneous</i>			
Sheep manure, etc.	43	13	934
Liming materials	44	10	...
Other materials	45	20	...
Check meals and fertilizers	22	42	...
		<hr/> 422	<hr/> 934
			75,350

¹ No official samples.

² For distribution of this tonnage see next page.

MIXED FERTILIZER TONNAGE

Grades Approved for Connecticut¹

Grade	Tons	Grade	Tons
0-14-14	392	5-10- 5	4,282
3-12- 6	2,253	5-10-10	6,899
4-10- 0	463	6- 3- 6	12,765
5- 3- 5	2,069	7- 7- 7	1,757
5- 8- 7	15,204		
		Total	46,084

Specialty and Other Grades
(Over 50 tons)

Grade	Tons	Grade	Tons
3- 8- 7	159	6- 8- 2	119
4- 8- 6	64	6-10- 4	172
4- 9- 7	519	8- 4- 8	691
4-10-10	301	8- 7- 3	70
4-12- 4	398	8- 8- 8	53
5- 8- 5	128	8-16- 8	328
5-17- 0	871	8-16-16	1,516
6- 7- 4	77		
		Total	5,466

(Less than 50 tons)

Grade	Tons	Grade	Tons
3-10- 3 }	27	6-12- 4 }	45
3-10- 5 }		6-12- 6 }	
		6-15-15 }	
4- 8- 4 }	71	8-24- 8 }	25
4-10- 2 }		10-10-10 }	
4-16-20 }	21	0-20-20 }	
5- 7- 3 }			
		Grand total	189
			51,739

¹ F. P. O. 5, Revised July 3, 1943.

I. RAW MATERIALS CHIEFLY VALUABLE FOR NITROGEN

Chemical Sources

Nitrate of soda, otherwise known as Chile saltpeter, has long been a common source of chemical nitrogen. The commercial products from natural sources are available in both the crystalline and pellet forms, and both are derived from the natural ore, caliche, obtained in the United States from synthetic ammonia and soda ash (sodium carbonate).

Sulphate of ammonia is formed when ammonia is combined with sulphuric acid. Commercially it is made by passing ammonia gas from coke ovens and gas plants into sulphuric acid.

Cyanamid and urea are other considerable sources of chemical nitrogen. Cyanamid is made by passing nitrogen gas through calcium carbide heated to high temperature. Urea is a synthetic product obtained by combining synthetic ammonia and carbon dioxide under high pressure and other suitable conditions.

For fertilizer purposes the nitrogen in both cyanamid and urea is classed as non-protein organic nitrogen, which relates it to the vegetable sources of nitrogen rather than the mineral sources such as nitrate of soda and sulphate of ammonia.

Analyses of official samples are given in Table 1. Unofficial samples examined for purchasers are not tabulated.

Vegetable and Animal Sources

Cottonseed meal and castor pomace are vegetable sources of nitrogen largely used in tobacco mixtures. Analyses of official samples are given in Table 2. One official sample of horn and hoof meal is also included.

II. RAW MATERIALS CHIEFLY VALUABLE FOR PHOSPHORIC ACID

Superphosphate was first prepared by treating bones with sulphuric acid. This simple process was proposed by Liebig in 1840 and a little later, in 1842, Lawes applied the method to mineral phosphates. These discoveries provided the basis for the commercial fertilizer industry.

Treatment of phosphate rock with sulphuric acid converts the natural phosphate largely into water-soluble form which is readily available to plants. Superphosphate commonly contains 16 per cent of available phosphoric acid, but in recent years the proportion of available phosphoric acid has been increased by treating the rock with phosphoric acid instead of sulphuric acid.

Superphosphate sold during the past year was practically all of the 20% grade. Two official samples of 18% grade and one unofficial sample of 47% grade were analyzed.

Analyses of official samples are given in Table 3.

III. RAW MATERIALS CHIEFLY VALUABLE FOR POTASH

Muriate of potash, sulphate of potash, sulphate of potash-magnesia and cottonhull ashes were the chief sources of potash used in this State last year. One sample of wood ashes was analyzed for a purchaser. It contained 3.49% of potash. Wood ashes also supply considerable amounts of calcium (about 30% CaO).

Analyses of official samples of potash materials are given in Table 4.

IV. MATERIALS SUPPLYING NITROGEN AND PHOSPHORIC ACID

Analyses of official samples of dry ground fish, ground bone and miscellaneous products supplying nitrogen and phosphoric acid, are given in Table 5.

V. MIXED FERTILIZERS

Analyses of 116 official samples of mixed fertilizer are given in Table 6. The results are summarized as follows:

Total number of samples	116	
Samples deficient in:		
one item	27	
two items	1	
three items	0	28
Percentage of samples meeting guaranties		76
Total guaranties made		336 ¹
Guaranties not met:		
nitrogen	17	
phosphoric acid	6	
potash	6	29
Percentage met		91

Most of the deficiencies were in nitrogen; but 91 per cent of all guaranties made were substantially met or exceeded.

Special and Home Mixtures

Sixty-nine special mixtures for tobacco were analyzed for tobacco growers during the year. Analyses are given in Table 7.

State Purchases of Fertilizers

Ingredient materials, as such, and mixed fertilizers supplied to state institutions on state purchase orders have been included in our inspection for several years. Such samples are indicated in the several tables of analyses. A summary of them is as follows:

Material	No. of analyses	Reference
Sulphate of ammonia	1	Table 1
Ammonia nitrate compound	2	Table 1
Superphosphate	2	Table 3
Muriate of potash	2	Table 4
Ground bone	2	Table 5
Mixed fertilizers	15	Table 6

¹ Twelve samples with only two guaranties.

One sample of sulphate of ammonia was 1 per cent under guaranty in nitrogen. A sample of 0-14-14 was 0.86 per cent under guaranty in phosphoric acid. There were no other notable deficiencies.

VI. MISCELLANEOUS

Sheep Manure. Thirteen official samples of sheep manure and other dry manures were analyzed and analyses are given in Table 8.

Two samples, Nos. 238 and 179, were low in nitrogen, and one of them (238) low also in potash.

Agricultural Lime. No regular inspection of liming materials is made because our fertilizer law exempts "lime" from classification as commercial fertilizer. A few samples have been analyzed, however, for purchasers and others and analyses are given in Table 9.

Other Miscellaneous Materials. Twenty samples of other miscellaneous materials have been examined. Some of these are listed, with analyses, in Table 10 for reference purposes.

Check Meals and Fertilizers. Analyses of check samples of cottonseed meal and of fertilizer materials have been made as a matter of collaboration in programs sponsored by the American Oil Chemists Society and by the F. S. Royster Guano Co. State, commercial and industrial chemists participate in these programs, the purpose of which is to promote uniformity and accuracy in analytical control work.

MAINTENANCE OF GUARANTIES

The maintenance of guaranties as shown by analyses of official samples of ingredient materials and mixed fertilizer summarized from Tables 1-6 and Table 8 is shown by the following tabulation. Deficiencies of 0.1 or less in nitrogen and 0.2 or less in phosphoric acid and potash are not considered. The summary shows that 91 per cent of all guaranties made have been met substantially. Considering the difficulties encountered in manufacturing under war-time conditions, this is a commendable record and compares favorably with normal performance.

Materials	No. of Samples	No. of Guaranties	Deficiencies
Nitrate of soda	2	2	none
Sulphate of ammonia	2	2	1
Uramon Fertilizer Compound	1	1	none
Ammonia Nitrate Compound	3	3	none
Cottonseed meal	3	3	none
Castor pomace	4	4	none
Horn and hoof meal	1	1	none
Superphosphate	13	13	none
Precipitated bone	1	1	none
Muriate of potash	4	4	1
Cottonhull ashes	2	1	none
Dry ground fish	3	6	none
Ground bone	9	18	4
Other materials	2	4	1
Mixed fertilizers	116	336	29
Sheep manure, etc.	13	39	3
Totals	166	435	39
Percentage of guaranties met	91

TABLE 1. ANALYSES OF NITRATE OF SODA, ETC.

Station No.	Manufacturer or Jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Nitrate of Soda				
77	Arcadian, The American. Allied Chemical & Dye Corp., New York, N. Y.	North Haven: J. P. Beach .	16.06	16.00
41	Chilean, Champion Brand. Chilean Nitrate Sales Corp., New York, N. Y.	West Haven: The American Agricultural Chemical Co. ..	16.00	16.00
Uramon Fertilizer Compound				
20	E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.	Bridgeport: The Berkshire Chemical Co.	42.20	42.00
Fertilizer Compound Containing Ammonium Nitrate				
85	Ashcraft-Wilkinson Co., Atlanta, Ga.	North Haven: Eastern States Farmers' Exchange..	32.50	32.50
136 ¹	Ashcraft-Wilkinson Co., Atlanta, Ga.	Cheshire: Connecticut Reformatory	32.60	32.50
197 ¹	Ashcraft-Wilkinson Co., Atlanta, Ga.	Norwich: Norwich State Hospital	32.92	32.50
Sulphate of Ammonia				
244	Arcadian. Allied Chemical & Dye Corp., New York, N. Y.	Cheshire: Cheshire Nursery	20.80	20.60
228 ¹	Allied Chemical & Dye Corp., New York, N. Y.	Southbury: Southbury Training School Farm	19.60	20.60

¹State purchase.

TABLE 2. ANALYSES OF CASTOR POMACE, COTTONSEED MEAL, ETC.

Station No.	Manufacturer or Jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Castor Pomace				
9987	Apothecaries Hall Co., Waterbury, Conn.	East Windsor: Apothecaries Hall Co.	6.27	4.50
199	Spencer Kellogg & Sons, Buffalo, N. Y.	Portland: The Rogers & Hubbard Co.	6.26 ¹
106	O. & W. Olds & Whipple, Inc., Hartford, Conn.	Hartford: Olds & Whipple, Inc.	5.85	4.50
205	Hubbard, The Rogers & Hubbard Co., Portland, Conn. .	Portland: The Rogers & Hubbard Co.	6.04	4.50
Cottonseed Meal				
9601	Brazilian. Bradley & Baker Co., New York, N. Y.	East Windsor: Apothecaries Hall Co.	6.64
131	"Lovit Brand" 41% L. B. Lovitt & Co., Memphis, Tenn.	East Windsor: Apothecaries Hall Co.	6.71	6.56
128	"Mofco". Maxton Oil & Fertilizer Co., Maxton, N. C. .	East Windsor: Apothecaries Hall Co.	6.29	5.76
Horn and Hoof Meal				
9988	Old Deerfield. Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass. ...	Hazardville: L. B. Haas & Co.	15.00	14.00

¹Sold on a unit basis.

TABLE 3. ANALYSES OF SUPERPHOSPHATE, ETC.

Station No.	Manufacturer or Wholesale Dealer	Dealer or Purchaser	Per cent phosphoric acid			
			Citrate-insoluble	Total	"Available"	
					Found	Guaranteed
Superphosphate						
39	18% Normal. The American Agricultural Chemical Co., North Weymouth, Mass.	West Haven: The American Agricultural Chemical Co.	0.63	19.29	18.66	18.00
9982	20%. Apothecaries Hall Co., Waterbury, Conn.	East Windsor: Apothecaries Hall Co.	1.20	21.60	20.40	20.00
73	Armour's Big Crop 20%. Armour Fertilizer Works, New York, N. Y.	East Windsor Hill: David Ahearn	0.79	21.26	20.47	20.00
176	Baugh's 20%. The Baugh & Sons Co., Baltimore, Md.	Hamden: Hamden Lehigh Coal Co.	0.80	20.86	20.06	20.00
223	Corenco 20%. Consolidated Rendering Co., Boston, Mass.	Thompsonville: Geo. S. Phelps & Co.	0.60	21.24	20.64	20.00
19	Davco Granulated 20%. The Davison Chemical Co., Baltimore, Md.	Bridgeport: The Berkshire Chemical Co. ..	1.39	23.12	21.73	20.00
185 ¹	Davco Granulated 20%. The Davison Chemical Co., Baltimore, Md.	Niantic: Conn. State Farm for Women ..	0.74	22.28	21.54	20.00
218 ¹	Davco Granulated 20%. The Davison Chemical Co., Baltimore, Md.	Middletown: Conn. State Hospital	1.22	21.90	20.68	20.00
74	Eastern States Pulverized 20%. Eastern States Farmers' Exchange, West Springfield, Mass.	Windsor: W. M. Simmons	0.91	22.03	21.12	20.00
109	O & W 20%. Olds & Whipple, Inc., Hartford, Conn.	Hartford: Olds & Whipple, Inc.	1.16	22.51	21.35	20.00
57	Hubbard's 20%. The Rogers & Hubbard Co., Portland, Conn.	Portland: The Rogers & Hubbard Co.	0.12	20.30	20.18	20.00
119	Sawco 20%. Stump & Walter Co., New York, N. Y.	Stamford: Stump & Walter Co.	0.86	22.61	21.75	20.00
92	Woodruff's 18%. Woodruff Fertilizer Works, Inc., North Haven, Conn.	North Haven: Woodruff's Fertilizer Works, Inc.	0.76	18.95	18.19	18.00
9986	Precipitated Bone Apothecaries Hall Co., Waterbury, Conn.	East Windsor: Apothecaries Hall Co.	0.95	42.48	41.53	38.00

¹State purchase.

TABLE 4. ANALYSES OF POTASH SALTS, ETC.

Station No.	Manufacturer or Jobber	Sampled from stock of	Per cent potash	
			Found	Guaranteed
Muriate of Potash				
241	60%. Armour's Fertilizer Works, New York, N. Y.	East Windsor Hill: David Ahearn	57.00	60.00
80	Eastern States, Eastern States Farmers' Exchange, West Springfield, Mass.	North Haven: Eastern States Branch	60.44	60.00
187 ¹	Hubbard's 60%. The Rogers & Hubbard Co., Portland, Conn.	Niantic: Conn. State Farm for Women	61.00	60.00
203 ¹	Hubbard's 60%. The Rogers & Hubbard Co., Portland, Conn.	Meriden: Conn. School for Boys	60.66	60.00
Cottonhull Ashes				
9983	Apothecaries Hall Co., Waterbury, Conn.	East Windsor: Apothecaries Hall Co.	30.78 ²
220	Old Deerfield. Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass.	West Suffield: H. L. Oppenheimer	35.00	35.00

¹State purchase.²Sold on a unit basis.

TABLE 5. ANALYSES OF GROUND FISH, BONE, ETC.

Station No.	Manufacturer and Brand	Sampled from stock of	Per cent nitrogen		Per cent phosphoric acid		Mechanical analysis (in percentage)	
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1/50 inch	Coarser than 1/50 inch
226 ¹	Dry Ground Fish Apothecaries Hall Co., Waterbury, Conn.	East Windsor: Apothecaries Hall Co.	9.80	9.00	7.10	5.00
103 ²	O & W Menhaden. Olds & Whipple, Inc., Hartford, Conn.	East Hartford: Olds & Whipple, Inc.	9.77	9.00	6.91	5.00
212 ³	Hubbard, The Rogers & Hubbard Co., Portland, Conn.	Portland: The Rogers & Hubbard Co.	9.89	9.46	7.06	5.00
177	Ground Bone Baugh's Raw. The Baugh & Sons Co., Baltimore, Md.	Hamden: Lehigh Coal Co.	3.97	3.70	19.50	20.50	41.7	58.3
79	Eastern States Ground Steamed. Eastern States Farmers' Exchange, West Springfield, Mass.	North Haven: Eastern States Branch	3.00	2.30	23.63	23.00	62.6	37.4
93	O & W. Olds & Whipple, Inc., Hartford, Conn.	Hartford: Olds & Whipple, Inc. ..	2.50	2.47	28.11	22.00	56.2	43.8
56 ⁴	Gro-Fast Strictly Bone Meal. The Rogers & Hubbard Co., Portland, Conn.	Portland: The Rogers & Hubbard Co.	3.81	3.70	22.45	20.00	57.0	43.0
135 ⁵	Gro-Fast Strictly Bone Meal. The Rogers & Hubbard Co., Portland, Conn.	Cheshire: Conn. Reformatory	4.11	3.70	22.89	20.00	58.0	42.0
200 ⁵	Gro-Fast Strictly Bone Meal. The Rogers & Hubbard Co., Portland, Conn.	Meriden: Undercliff Sanitarium... Portland: The Rogers & Hubbard Co.	3.54	3.70	22.90	20.00	59.0	41.0
211	Hubbard, The Rogers & Hubbard Co., Portland, Conn.	Portland: The Rogers & Hubbard Co.	2.98	2.00	24.20	25.00	75.0	25.0
213	Hubbard Raw Knuckle Bone Flour. The Rogers & Hubbard Co., Portland, Conn.	Portland: The Rogers & Hubbard Co.	4.22	3.70	24.90	24.70	58.0	42.0

113	Sawco, Stumpp & Walter Co., New York, N. Y.	Stamford: Stumpp & Walter Co...	2.71	2.47	23.59	24.00	60.0	40.0
210	Digesta-Bone Coarse, Consolidated Chemical Industries, Inc., New York, N. Y.	Portland: The Rogers & Hubbard Co.	1.03	0.80	34.43	32.00	56.8	43.2
243	Milorganite Sewerage Commission of the City of Milwau- kee, Milwaukee, Wis.	Cheshire: Cheshire Nursery	5.77	6.00	3.10 ^a	2.75

¹Chlorine 0.20%.²Chlorine 0.33%.³Chlorine 0.24%.⁴Moisture 10.9%.⁵State purchase.^aGuaranteed "available" phosphoric acid 2.00%, found 2.70%.

TABLE 6. ANALYSES OF MIXED FERTILIZERS

Station No.	Manufacturer and Brand	Place of sampling
The Acme Guano Co., Baltimore, Md.		
221	Acme 3-12-6	Thompsonville
215	Acme 5-8-7	Middletown
245	Acme 5-10-5	Suffield
246	Acme 5-10-5 Victory Garden	Suffield
214	Acme 7-7-7	Middletown
The American Agricultural Chemical Co., North Weymouth, Mass.		
36	A A Quality Fertilizer 5-8-7	West Haven
38	Agrico for Corn 3-12-6	West Haven
35	Agrico for Gardens (V G Fertilizer for Food Production Only) 5-10-5	West Haven
40	Agrico for Lawns, Trees and Shrubs 6-10-4	West Haven
34	Agrico for New England 5-8-7	West Haven
37	Agrico for Potatoes 5-10-10	West Haven
284	Agrico for Tobacco 6-3-6	East Hartford
22	Agrico for Top Dressing 7-7-7	West Haven
Apothecaries Hall Co., Waterbury, Conn.		
225	Liberty 5-3-5	East Windsor
130	Liberty 6-3-6	East Windsor
129	Liberty Fertilizer 0-14-14	East Windsor
9979	Liberty Fertilizer 3-12-6	East Windsor
224	Liberty Fertilizer 4-10-0	East Windsor
9977	Liberty Fertilizer 5-8-7	East Windsor
9978	Liberty Fertilizer 5-10-10	East Windsor
9980	Liberty Fertilizer 7-7-7	East Windsor
9981	Liberty Green Gro Fertilizer for Lawns, Flowers, Shrubs and Trees, 6-7-4	East Windsor
9984	Liberty Victory Garden Fertilizer 5-10-5	East Windsor
Armour Fertilizer Works, New York, N. Y.		
240	Armour's Big Crop Fertilizer 3-12-6	East Windsor Hill
71	Armour's Big Crop Fertilizer 5-8-7	East Windsor Hill
239	Armour's Big Crop Fertilizer 5-10-10	East Windsor Hill
236	Armour's Big Crop Fertilizer 7-7-7	Norwich
286	Armour's Big Crop Tobacco Special 5-3-5	East Windsor Hill
285	Armour's Big Crop Tobacco Special 6-3-6	East Windsor Hill
72	Armour's Victory Garden Fertilizer 5-10-5	East Windsor Hill
The Baugh & Sons Co., Baltimore, Md.		
137	Baugh's Advanced Growers Special 5-8-7	Hamden
138	Baugh's Perfection Brand 3-12-6	Hamden
9995	Baugh's Premium Plant Food and Soil Builder 5-10-5	Hamden
9994	Baugh's Victory Garden Fertilizer for Food Production Only 5-10-5	Hamden

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Per cent Nitrogen					Per cent Phosphoric acid			Per cent Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "available"	As muriate	Total	
0.26	2.16	0.42	0.16	3.00	0.60	12.60	12.00	6.51	6.51	221
0.32	3.78	0.52	0.30	4.92	0.72	10.36	9.64	7.05	7.05	215
0.38	3.78	0.64	0.18	4.98	0.71	11.79	11.08	5.35	5.35	245
0.30	3.64	0.46	0.35	4.75	0.51	11.35	10.84	5.78	5.78	246
0.28	5.18	0.64	0.18	6.28	0.10	8.45	8.35	7.15	7.15	214
0.67	3.88	0.14	0.24	4.93	0.85	9.44	8.59	7.19	7.19	36
0.53	2.14	0.16	0.17	3.00	1.25	13.65	12.40	6.51	6.51	38
0.55	4.06	0.26	0.15	5.02	1.26	11.56	10.30	5.21	5.21	35
0.61	4.84	0.24	0.32	6.01	0.88	11.46	10.58	4.11	4.11	40
0.78	3.44	0.26	0.16	4.64	1.09	9.18	8.09	7.04	7.04	34
0.77	3.92	0.12	0.14	4.95	1.50	11.70	10.20	10.00	10.00	37
0.63	0.04	1.56	3.57	5.80	0.32	3.96	3.64	0.81	6.18	284
0.30	5.68	0.32	0.60	6.90	0.71	8.06	7.35	7.17	7.17	22
0.00	0.20	2.60	2.67	5.47	0.08	5.39	5.31	0.84	4.96	225
0.00	0.26	3.29	2.91	6.46	0.06	4.83	4.77	0.72	6.74	130
.....	0.58	14.18	13.60	14.52	14.52	129
0.00	2.06	0.57	0.65	3.28	1.14	13.14	12.00	6.36	6.36	9979
0.25	2.38	0.40	1.31	4.34	0.45	10.45	10.00	224
0.00	4.03	0.61	0.72	5.36	0.54	8.65	8.11	8.39	8.39	9977
0.25	4.20	0.34	0.58	5.37	0.91	11.15	10.24	10.29	10.29	9978
0.46	5.26	0.54	0.93	7.19	0.27	8.08	7.81	7.02	7.02	9880
0.00	4.30	0.54	1.63	6.47	0.30	7.59	7.29	4.67	4.67	9981
0.35	3.80	0.44	0.78	5.37	0.71	11.20	10.49	5.64	5.64	9984
0.43	2.08	0.24	0.26	3.01	0.56	12.90	12.34	6.41	6.41	240
0.44	3.98	0.18	0.34	4.94	0.41	8.90	8.49	6.98	6.98	71
0.61	3.86	0.18	0.35	5.00	0.49	10.60	10.11	9.83	9.83	239
0.64	5.54	0.18	0.27	6.63	0.26	7.83	7.57	7.29	7.29	236
0.23	0.64	1.28	2.90	5.05	0.35	4.15	3.80	1.39	5.74	286
0.27	0.72	2.08	2.76	5.83	0.34	4.30	3.96	1.04	6.09	285
0.53	4.00	0.12	0.25	4.90	0.29	10.66	10.37	4.44	5.14	72
0.00	4.32	0.47	0.30	5.09	0.59	8.76	8.17	7.60	7.60	137
0.52	2.04	0.14	0.17	2.87	0.81	13.97	13.16	6.01	6.01	138
0.33	3.86	0.38	0.35	4.92	1.10	11.68	10.58	5.23	5.23	9995
0.17	4.22	0.34	0.23	4.96	1.26	11.39	10.13	5.08	5.08	9994

TABLE 6. ANALYSES OF MIXED FERTILIZERS—(Continued)

Station No.	Manufacturer and Brand	Place of sampling
Berkshire Chemical Co., Bridgeport, Conn.		
261	Berkshire Fertilizer 0-14-14 (5 Units Potash from Sulphate Potash)	Bridgeport
13	Berkshire Fertilizer 3-12-6	Bridgeport
15	Berkshire Fertilizer 5-8-7	Bridgeport
17	Berkshire Fertilizer 5-10-5	Bridgeport
14	Berkshire Fertilizer Victory Garden 5-10-5	Bridgeport
16	Berkshire Fertilizer 5-10-10	Bridgeport
180	Berkshire 5-10-10 (Potash from Sulphate)	Bridgeport
260	Berkshire 6-3-6 Tobacco	Bridgeport
18	Berkshire Specialty Fertilizer 4-10-2	Bridgeport
Consolidated Rendering Co., Boston, Mass.		
11	Corenco 0-14-14 Top Dresser	West Haven
1	Corenco 3-12-6 Animal Brand	West Haven
237 ¹	Corenco 3-12-6 Animal Brand	Mansfield
9999	Corenco 5-8-7 Potato and General Crop	West Haven
196 ¹	Corenco 5-8-7 Potato and General Crop	Norwich
202 ¹	Corenco 5-8-7 Potato and General Crop	Meriden
4	Corenco 5-10-5 Victory Garden Fertilizer	West Haven
2	Corenco 5-10-10 Peerless Potato	West Haven
201 ¹	Corenco 5-10-10 Peerless Potato	Meriden
227 ¹	Corenco 5-10-10 Peerless Potato	Southbury
178	Corenco 6-3-6 Special Tobacco Grower	West Haven
5	Corenco 6-8-2 Landscape Fertilizer	West Haven
6	Corenco 7-7-7 Complete Fruit and Top Dressing..	West Haven
186 ¹	Corenco 7-7-7 Complete Fruit and Top Dressing..	Niantic
198 ¹	Corenco 7-7-7 Complete Fruit and Top Dressing..	Norwich
331	Corenco 7-7-7 Complete Fruit and Top Dressing..	West Haven
Eastern States Farmers' Exchange, West Springfield, Mass.		
82	Eastern States 5-10-5 V G (Victory Garden) ..	North Haven
110	Eastern States 5-10-10	East Hartford
83	Eastern States 5-17-0	North Haven
443	Eastern States 8-4-8 Tobacco	East Hartford
232	Eastern States Fertilizer 8-8-8	Bethel
111	Eastern States 8-16-8	East Hartford
84	Eastern States 8-16-16	North Haven
Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass.		
219	Old Deerfield 6-3-6	West Suffield
Olds & Whipple, Inc., Hartford, Conn.		
107	O & W 0-14-14	East Hartford
134 ¹	O & W 0-14-14	Cheshire
229 ¹	O & W 0-14-14	Southbury

¹State purchase.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Per cent Nitrogen					Per cent Phosphoric acid			Per cent Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "available"	As muriate	Total	
.....	0.60	14.40	13.80	0.86	13.79	261
0.64	2.52	0.08	0.19	3.43	1.28	13.30	12.02	6.21	6.21	13
0.16	4.24	0.28	0.18	4.86	0.43	8.71	8.28	7.23	7.23	15
0.53	4.40	0.06	0.26	5.25	0.55	10.63	10.08	5.32	5.32	17
0.36	4.26	0.18	0.25	5.05	0.42	10.41	9.99	5.24	5.24	14
0.57	4.16	0.22	0.25	5.20	0.69	11.36	10.67	10.02	10.02	16
0.16	4.06	0.50	0.28	5.00	0.40	10.51	10.11	1.41	10.05	180
1.75	0.16	3.26	2.08	6.25	0.20	3.83	3.63	0.85	5.79	260
0.47	3.32	0.18	0.33	4.30	0.71	11.43	10.72	2.31	2.31	18
.....	0.07	15.49	15.42	13.95	13.95	11
0.55	2.06	0.12	0.35	3.08	1.00	13.05	12.05	6.46	6.46	1
0.32	1.94	0.30	0.45	3.01	0.86	13.17	12.31	6.36	6.36	237
0.80	3.96	0.10	0.30	5.16	0.44	9.10	8.66	7.23	7.23	9999
0.77	3.54	0.46	0.06	4.83	0.96	8.68	7.72	7.02	7.02	196
0.75	4.26	0.00	0.29	5.30	0.27	8.40	8.13	7.09	7.09	202
0.00	2.90	1.96	0.39	5.25	0.36	10.54	10.18	5.26	5.26	4
0.86	4.06	0.16	0.12	5.20	0.66	10.66	10.00	10.08	10.08	2
0.89	4.00	0.08	0.09	5.06	0.51	10.71	10.20	10.00	10.00	201
0.88	4.00	0.08	0.14	5.10	0.58	10.42	9.84	10.49	10.49	227
0.49	0.28	2.56	3.28	6.61	0.10	3.82	3.72	0.80	6.01	178
0.84	3.74	0.22	1.46	6.26	0.35	8.91	8.56	2.95	2.95	5
0.70	5.61	0.19	0.20	6.70	0.51	7.89	7.38	7.48	7.48	6
0.61	5.56	0.68	0.15	7.00	0.50	7.75	7.25	7.17	7.17	186
0.69	5.56	0.44	0.09	6.78	0.58	8.00	7.42	6.84	6.84	198
0.91	5.80	0.10	0.15	6.96	0.20	7.73	7.53	7.26	7.26	331
0.95	3.84	0.12	0.13	5.04	0.60	11.16	10.56	5.10	5.10	82
1.14	4.00	0.00	0.14	5.28	0.70	11.90	11.20	10.04	10.04	110
0.99	3.52	0.24	0.30	5.05	3.04	19.18	16.14	83
1.42	1.16	3.56	2.24	8.38	0.14	5.35	5.21	1.06	8.24	443
1.69	5.76	0.04	0.28	7.77	0.28	9.08	8.80	9.41	9.41	232
1.52	6.20	0.00	0.28	8.00	0.51	16.51	16.00	8.29	8.29	111
1.71	6.06	0.00	0.16	7.93	0.50	17.10	16.60	2.56	16.84	84
0.00	0.68	2.71	2.94	6.33	0.09	4.49	4.40	0.70	7.04	219
.....	0.41	15.07	14.66	14.21	14.21	107
.....	0.40	15.15	14.75	14.73	14.73	134
.....	0.45	14.69	14.24	14.17	14.17	229

TABLE 6. ANALYSES OF MIXED FERTILIZERS—(Continued)

Station No.	Manufacturer and Brand	Place of sampling
102	O & W 3-12-6 Corn Fertilizer	East Hartford
105	O & W 5-3-5 Complete Tobacco Fertilizer—Potash Derived from Cottonhull Ashes	East Hartford
184	O & W 5-3-5 Complete Tobacco Fertilizer	East Hartford
112	O & W 5-8-7 Potato and General Purpose Fertilizer	Wapping
181	O & W 5-8-7 Potato and General Purpose Fertilizer with Sulphate of Potash	East Hartford
101	O & W 5-10-5 Victory Garden Fertilizer	East Hartford
133 ¹	O & W 5-10-5 Victory Garden Fertilizer	Cheshire
195 ¹	O & W 5-10-5 Victory Garden Fertilizer	Niantic
182	O & W 5-10-10 Potato Fertilizer	East Hartford
183	O & W 6-3-6 Blue Label Tobacco Fertilizer	East Hartford
104	O & W 6-3-6 Blue Label Tobacco Fertilizer—Potash Derived from Cottonhull Ashes	East Hartford
108	O & W 7-7-7 Top Dressing and Grass Fertilizer..	East Hartford
The Rogers & Hubbard Co., Portland, Conn.		
54	Gro Fast Plant Food 5-8-5	Portland
444	Hubbard Climax Tobacco Fertilizer 5-3-5	Portland
42	Hubbard High Potash Fertilizer 5-10-10	Portland
53	Hubbard Potato Fertilizer 5-8-7	Portland
43	Hubbard Tobacco Grower 6-3-6	Portland
51	Red H Brand 0-14-14	Portland
50	Red H Brand 3-12-6	Portland
44	Red H Brand 5-8-7	Portland
49	Red H Brand 5-10-10	Portland
45	Red H Brand 7-7-7	Portland
52	Victory Garden Fertilizer (Food Production Only) 5-10-5	Portland
O. M. Scott & Sons Co., Marysville, Ohio		
69	Scott's Garden Builder 5-10-5	Meriden
70	Scott's Turf Builder 8-7-3	Meriden
M. L. Shoemaker Co., Inc., Philadelphia, Pa.		
58	Shoemaker's "Swift Sure" Tobacco Starter 4-10-(Portland
Stumpp & Walter Co., New York, N. Y.		
114	Sawco Emerald Grass Fertilizer 5-7-3	Stamford
115	Sawco General Garden Fertilizer 5-10-5	Stamford
Summers Fertilizer Co., Baltimore, Md.		
295 ¹	"Summers" 0-14-14	Mansfield
217 ¹	"Summers" Fertilizer 5-8-7	Middletown
230 ¹	"Summers" Fertilizer 5-8-7	Newtown
231 ¹	"Summers" Fertilizer 5-10-5	Newtown

¹State purchase.

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Per cent Nitrogen					Per cent Phosphoric acid			Per cent Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "available"	As muriate	Total	
0.46	1.94	0.26	0.76	3.42	0.46	12.29	11.83	6.58	7.72	102
0.50	0.16	2.08	2.64	5.38	0.24	4.29	4.05	0.90	6.92	105
0.34	0.08	2.20	2.61	5.23	0.21	3.46	3.25	0.74	5.78	184
0.76	4.00	0.16	0.41	5.33	0.29	9.61	9.32	7.67	7.67	112
0.55	4.12	0.22	0.46	5.35	0.40	9.35	8.95	1.00	7.33	181
0.29	4.00	0.48	0.35	5.12	0.51	11.26	10.75	5.65	5.65	101
0.70	3.80	0.20	0.40	5.10	0.43	11.40	10.97	5.41	5.41	133
0.65	3.92	0.06	0.30	4.93	0.39	11.61	11.22	5.25	5.25	195
0.67	4.06	0.20	0.39	5.32	0.37	11.57	11.20	10.50	10.50	182
0.55	0.08	2.46	2.98	6.07	0.19	4.14	3.95	0.66	6.26	183
0.46	0.08	2.56	2.94	6.04	0.20	4.25	4.05	0.80	8.47	104
0.00	6.06	0.20	0.45	6.71	0.25	8.44	8.19	7.15	7.15	108
0.79	3.02	0.28	1.16	5.25	0.19	8.80	8.61	5.72	5.72	54
0.32	0.04	2.56	2.42	5.34	0.12	3.61	3.49	0.70	4.93	444
0.58	2.64	0.76	1.34	5.32	0.51	10.85	10.34	10.17	10.17	42
0.33	2.62	0.88	1.30	5.13	0.16	9.06	8.90	7.77	7.77	53
0.77	0.32	5.15	2.73	6.24	0.35	4.56	4.21	1.40	7.05	43
....	0.10	14.35	14.25	14.57	14.57	51
0.71	2.20	0.38	0.54	3.83	0.74	12.81	12.07	6.67	6.67	50
1.06	3.78	0.00	0.63	5.47	0.27	8.66	8.39	7.25	7.25	44
1.19	3.60	0.12	0.52	5.43	0.43	10.95	10.52	10.00	10.00	49
0.98	5.58	0.24	0.54	7.34	0.14	7.47	7.33	7.26	7.26	45
0.86	3.40	0.36	0.62	5.24	0.39	10.65	10.26	5.41	5.41	52
0.12	3.92	0.18	0.88	5.10	0.10	10.04	9.94	5.06	5.06	69
2.47	3.28	0.46	1.94	8.15	0.10	8.26	8.16	3.33	3.33	70
0.77	2.32	0.10	1.00	4.19	2.15	12.87	10.72	58
0.47	4.00	0.14	0.40	5.01	0.45	11.05	10.60	5.65	5.65	114
0.94	3.82	0.22	0.39	5.37	0.60	11.15	10.55	5.35	5.35	110
...	0.48	13.62	13.14	14.86	14.86	295
0.49	4.06	0.14	0.23	4.92	0.26	8.45	8.19	6.38	7.29	217
0.60	4.00	0.14	0.26	5.00	0.65	8.44	7.79	6.21	7.21	230
0.60	3.70	0.32	0.13	4.75	0.52	10.40	9.88	5.19	5.19	231

TABLE 6. ANALYSES OF MIXED FERTILIZERS—(Concluded)

Station No.	Manufacturer and Brand	Place of sampling
	Swift & Co. Fertilizer Works, Baltimore, Md.	
9996	Vigoro 4-12-4	Westville
9997	Vigoro Victory Garden Fertilizer—For Food Pro- duction Only 5-10-5	Westville
	Tennessee Corp. Lockland, Ohio	
122	5-10-5 Loma	Greenwich
123	5-10-5 Lima (Victory Garden Fertilizer)	Greenwich
	I. P. Thomas & Sons Co., Camden, N. J.	
76	Soil-Rich Victory Garden Fertilizer 5-10-5	North Haven
78	I. P. Thomas 5-8-7	North Haven
75	Tip Top Fertilizer 3-12-6	North Haven
	F. H. Woodruff & Sons, Inc., Milford, Conn.	
233	Gros-Sod Grass Food 6-8-2	Milford
	Woodruff Fertilizer Works, Inc., North Haven, Conn.	
86	Clark's Tip Top 5-8-7 Fertilizer	North Haven
89	Woodruff's 0-14-14	North Haven
87	Woodruff's 5-8-7	North Haven
91	Woodruff's 5-10-5 Victory Garden	North Haven
90	Woodruff's 5-10-10 Fertilizer	North Haven
88	Woodruff's Tobacco Fertilizer 6-3-6	North Haven

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Per cent Nitrogen					Per cent Phosphoric acid			Per cent Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "available"	As muriate	Total	
0.61	3.30	0.18	0.20	4.29	0.53	13.09	12.56	4.71	4.71	9996
0.32	4.20	0.26	0.25	5.03	0.49	10.56	10.07	6.18	6.18	9997
0.33	4.32	0.32	0.16	5.13	0.18	10.51	10.33	5.16	5.16	122
0.15	4.06	0.50	0.18	4.89	0.29	10.92	10.63	4.94	4.94	123
0.77	3.84	0.22	0.67	5.50	2.26	12.03	9.77	3.93	3.93	76
0.36	3.96	0.46	0.37	5.15	0.67	8.93	8.26	7.00	7.00	78
0.46	2.10	0.28	0.35	3.19	1.75	14.26	12.51	6.00	6.00	75
0.73	3.44	0.24	1.32	5.73	0.31	8.72	8.41	2.46	2.46	233
0.40	3.92	0.16	0.69	5.17	0.79	9.36	8.57	6.63	6.63	86
...	0.80	13.92	13.12	13.22	14.05	89
0.23	3.70	0.26	0.96	5.15	0.62	8.49	7.87	7.50	7.50	87
0.69	3.40	0.16	0.59	4.84	1.04	11.18	10.14	5.21	5.21	91
0.48	3.44	0.28	0.84	5.04	0.76	10.76	10.00	9.71	9.71	90
2.18	0.10	1.68	2.04	6.00	0.10	3.11	3.00	0.82	6.12	88

TABLE 7. ANALYSES OF SPECIAL AND HOME MIXTURES

Station No.	Name of Mixture	Sampled or submitted by	Total nitrogen percentage	Per cent Phosphoric acid			Per cent Potash			Station No.
				Citrate-insoluble	Total	So-called "available"	As muriate	Total	Chlorine	
9658	Fertilizer Formula A—DEE.....	Hartford: Consolidated Cigar Corp...	6.10	0.15	4.60	4.45	0.45	6.59	0.34	9658
9659	Home Mixed Fertilizer—Formula B HU	Hartford: Consolidated Cigar Corp...	6.47	0.45	4.96	4.51	0.72	10.79	0.54	9659
9660	Home Mixed Fertilizer—Formula B, Sample DEE	Hartford: Consolidated Cigar Corp...	6.40	0.18	5.04	4.86	0.52	8.46	0.47	9660
9671	Home Mixed Fertilizer—Formula A G	Hartford: Consolidated Cigar Corp...	6.21	0.51	5.69	5.18	0.01	9.02	0.01	9671
9672	Home Mixed Fertilizer—Formula B G	Hartford: Consolidated Cigar Corp...	6.31	0.53	5.26	4.73	0.76	10.18	0.57	9672
9677	Home Mixed Fertilizer—Formula A HU	Hartford: Consolidated Cigar Corp...	6.35	0.95	5.26	4.70	0.49	10.20	0.37	9677
9703	Home Mixture—44C	Hartford: L. B. Haas & Co.	5.46	0.96	6.46	5.51	0.05	8.35	0.04	9703
9704	Home Mixture—44CA	Hartford: L. B. Haas & Co.	4.84	1.10	6.35	5.25	0.31	9.76	0.23	9704
9706	Home Mixture—44 B	Hartford: L. B. Haas & Co.	5.10	0.85	5.08	4.23	0.51	11.33	0.38	9706
9707	Home Mixture—44	Hartford: L. B. Haas & Co.	5.56	0.85	5.73	4.88	1.22	9.88	0.92	9707
9370	Home Mixed Fertilizer—Formula 4-2-44	Simsbury: Cullman Bros., Inc.	5.68	0.51	4.96	4.45	0.32	3.28	0.24	9370
9371	Home Mixed Fertilizer—Formula 4-S-M-44	Simsbury: Cullman Bros., Inc.	8.03	0.43	14.50	14.07	0.36	1.43	0.27	9371
9372	Home Mixed Fertilizer—Formula 4-3-44	Simsbury: Cullman Bros., Inc.	5.67	0.50	4.95	4.45	0.32	4.23	0.24	9372
9373	Home Mixed Fertilizer—Formula 4-4-44	Simsbury: Cullman Bros., Inc.	5.48	0.42	4.56	4.14	0.47	4.35	0.35	9373
9374	Home Mixed Fertilizer—Formula 4-6-44	Simsbury: Cullman Bros., Inc.	5.65	0.41	4.61	4.20	0.33	4.58	0.25	9374
9375	Home Mixed Fertilizer—Formula 4-5-44	Simsbury: Cullman Bros., Inc.	5.50	0.49	4.52	4.03	0.36	4.26	0.27	9375

TABLE 7. ANALYSIS OF SPECIAL AND HOME MIXTURES—(Continued)

Station No.	Name of Mixture	Sampled or submitted by	Total nitrogen percentage	Per cent Phosphoric acid			Per cent Potash			Station No.
				Citrate-insoluble	Total	So-called "available"	As muriate	Total	Chlorine	
9376	Home Mixed Fertilizer—Formula 4-8-44	Simsbury: Cullman Bros., Inc.	4.82	0.54	4.57	4.03	0.70	7.77	0.53	9376
9377	Home Mixed Fertilizer—Formula 4-7-44	Simsbury: Cullman Bros., Inc.	5.53	0.44	4.81	4.37	0.32	3.94	0.24	9377
9513	Home Mixed Fertilizer—Formula 5-1-44	Simsbury: Cullman Bros., Inc.	5.49	0.19	5.06	4.87	0.57	6.02	0.43	9513
9514	Home Mixed Fertilizer—Formula 5-6-44	Simsbury: Cullman Bros., Inc.	5.26	0.10	6.49	6.39	0.49	6.19	0.37	9514
9515	Home Mixed Fertilizer—Formula 5-4-44	Simsbury: Cullman Bros., Inc.	5.88	0.16	4.09	3.93	0.61	7.03	0.46	9515
9516	Home Mixed Fertilizer—Formula 5-2-44	Simsbury: Cullman Bros., Inc.	5.14	0.17	6.47	6.30	0.68	5.96	0.51	9516
9517	Home Mixed Fertilizer—Formula 5-3-44	Simsbury: Cullman Bros., Inc.	5.43	0.38	3.89	3.51	0.68	6.72	0.51	9517
9518	Home Mixed Fertilizer—Formula 5-5-44	Simsbury: Cullman Bros., Inc.	5.15	0.20	6.41	6.21	0.61	5.72	0.46	9518
9519	Home Mixed Fertilizer—Formula 5-8-44	Simsbury: Cullman Bros., Inc.	5.66	0.20	5.30	5.10	0.60	6.27	0.45	9519
9520	Home Mixed Fertilizer—Formula 5-S-M-44	Simsbury: Cullman Bros., Inc.	7.82	0.33	13.14	12.81	0.36	1.67	0.27	9520
9521	Home Mixed Fertilizer—Formula 5-7-44	Simsbury: Cullman Bros., Inc.	5.26	0.18	6.71	6.53	0.57	6.02	0.43	9521
9549	Home Mixed Fertilizer—Formula 2-K-1-44	Simsbury: Cullman Bros., Inc.	5.45	0.20	6.75	6.55	0.65	6.67	0.49	9549
9550	Home Mixed Fertilizer—Formula 2-L&B-44	Simsbury: Cullman Bros., Inc.	5.60	0.15	4.10	3.85	0.60	6.82	0.45	9550
9551	Home Mixed Fertilizer—Formula 2-N-2-44	Simsbury: Cullman Bros., Inc.	5.38	0.10	5.45	5.35	0.65	6.20	0.49	9551

TABLE 7. ANALYSES OF SPECIAL AND HOME MIXTURES—(Continued)

Station No.	Name of Mixture	Sampled or submitted by	Total nitrogen percentage	Per cent Phosphoric acid			Per cent Potash			Station No.
				Citrate-insoluble	Total	So-called "available"	As muriate	Total	Chlorine	
9552	Home Mixed Fertilizer—Formula 2-H-1-44	Simsbury: Cullman Bros., Inc.	4.31	0.11	5.31	5.20	0.65	6.62	0.49	9552
9553	Home Mixed Fertilizer—Formula 2-N-3-44	Simsbury: Cullman Bros., Inc.	5.22	0.15	4.78	4.63	0.70	6.71	0.53	9553
9554	Home Mixed Fertilizer—Formula 2-S-M-44	Simsbury: Cullman Bros., Inc.	8.03	0.11	13.26	13.15	0.28	1.83	0.21	9554
9555	Home Mixed Fertilizer—Formula 2-K-6-44	Simsbury: Cullman Bros., Inc.	4.71	0.56	7.66	7.10	0.70	6.79	0.53	9555
9556	Home Mixed Fertilizer—Formula 2-K-5-44	Simsbury: Cullman Bros., Inc.	4.97	0.06	6.94	6.88	0.48	5.19	0.36	9556
9557	Home Mixed Fertilizer—Formula 2-H-1-44	Simsbury: Cullman Bros., Inc.	5.01	0.13	5.51	5.38	0.68	6.83	0.51	9557
9558	Home Mixed Fertilizer—Formula 2-K-2-44	Simsbury: Cullman Bros., Inc.	4.53	0.10	6.60	6.50	0.72	7.29	0.54	9558
9559	Home Mixed Fertilizer—Formula 2-H-2-44	Simsbury: Cullman Bros., Inc.	4.85	0.15	7.05	6.90	0.65	7.40	0.49	9559
9560	Home Mixed Fertilizer—Formula 2-H-3-44	Simsbury: Cullman Bros., Inc.	5.76	0.20	7.10	6.90	0.39	5.90	0.29	9560
9594	Home Mixed Fertilizer—Formula 3-V-2-44	Simsbury: Cullman Bros., Inc.	4.40	0.20	5.15	4.95	0.45	6.91	0.34	9594
9595	Home Mixed Fertilizer—Formula 3-S-3-44	Simsbury: Cullman Bros., Inc.	4.62	0.17	4.15	3.98	0.45	6.36	0.34	9595
9596	Home Mixed Fertilizer—Formula 3-H-3-44	Simsbury: Cullman Bros., Inc.	4.73	0.24	4.55	4.31	0.40	6.05	0.30	9596
9597	Home Mixed Fertilizer—Formula 3-C-13-44	Simsbury: Cullman Bros., Inc.	5.17	0.25	4.70	4.45	0.45	6.18	0.34	9597
9598	Home Mixed Fertilizer—Formula 3-11-44	Simsbury: Cullman Bros., Inc.	4.48	0.40	5.17	4.77	0.53	6.09	0.40	9598

TABLE 7. ANALYSES OF SPECIAL AND HOME MIXTURES—(Continued)

Station No.	Name of Mixture	Sampled or submitted by	Total nitrogen percentage	Per cent Phosphoric acid		Per cent Potash			Station No.
				Citrate-insoluble	Total	So-called "available"	As murate	Total	
9599	Home Mixed Fertilizer—Formula 3-Z-44	Simsbury: Cullman Bros., Inc.	4.66	0.21	4.80	4.59	0.48	6.43	9599
9600	Home Mixed Fertilizer—Formula 3-H-1-44	Simsbury: Cullman Bros., Inc.	4.90	0.54	3.85	3.31	0.44	5.90	9600
9602	Home Mixed Fertilizer—Formula 3-B-44	Simsbury: Cullman Bros., Inc.	4.18	0.26	4.96	4.70	0.58	6.87	9602
9603	Home Mixed Fertilizer—Formula 3-S-1&2-44	Simsbury: Cullman Bros., Inc.	4.95	0.29	4.75	4.46	0.56	6.05	9603
9604	Home Mixed Fertilizer—Formula 3-H-2-44	Simsbury: Cullman Bros., Inc.	5.15	0.26	3.66	3.40	0.40	5.62	9604
9786	Home Mixed Fertilizer—Formula 3-S-M-44	Simsbury: Cullman Bros., Inc.	8.19	0.39	12.31	11.92	0.27	1.78	9786
9787	Home Mixed Fertilizer—Formula 1-Stj-1-44	Simsbury: Cullman Bros., Inc.	5.23	0.60	6.41	5.81	0.36	6.26	9787
9788	Home Mixed Fertilizer—Formula 1-A-3-44	Simsbury: Cullman Bros., Inc.	5.58	0.26	5.91	5.65	0.29	6.13	9788
9789	Home Mixed Fertilizer—Formula 1-B-3-44	Simsbury: Cullman Bros., Inc.	4.78	0.17	5.47	5.30	0.29	6.91	9789
9790	Home Mixed Fertilizer—Formula S-C-M-44-5-7-9	Simsbury: Cullman Bros., Inc.	6.03	0.95	7.51	6.56	0.60	10.27	9790
9791	Home Mixed Fertilizer—Formula 1-A-1-44	Simsbury: Cullman Bros., Inc.	5.07	0.24	5.65	5.41	0.32	6.24	9791
9792	Home Mixed Fertilizer—Formula 1-A-8-44	Simsbury: Cullman Bros., Inc.	5.19	0.27	5.76	5.49	0.28	5.29	9792
9793	Home Mixed Fertilizer—Formula 1-A-7-44	Simsbury: Cullman Bros., Inc.	5.50	0.22	6.00	5.78	0.27	5.35	9793
9794	Home Mixed Fertilizer—Formula 1-A-2-44	Simsbury: Cullman Bros., Inc.	5.03	0.28	6.80	6.52	0.35	5.00	9794

TABLE 7. ANALYSES OF SPECIAL AND HOME MIXTURES—(Concluded)

Station No.	Name of Mixture	Sampled or submitted by	Total nitrogen percentage	Per cent Phosphoric acid			Per cent Potash			Station No.
				Citrate-insoluble	Total	"So-called" available	As murate	Total	Chlorine	
9795	Home Mixed Fertilizer—Formula 1-S-M-44	Simsbury: Cullman Bros., Inc.	8.37	0.38	13.95	13.57	0.11	1.78	0.08	9795
9796	Home Mixed Fertilizer—Formula 1-P-1-44	Simsbury: Cullman Bros., Inc.	4.23	0.25	7.01	6.76	0.45	7.15	0.34	9796
9797	Home Mixed Fertilizer—Formula 1-B-1-44	Simsbury: Cullman Bros., Inc.	5.07	0.20	5.80	5.60	0.28	6.83	0.21	9797
9798	Home Mixed Fertilizer—Formula 1-A-5-44	Simsbury: Cullman Bros., Inc.	5.61	0.21	5.25	5.04	0.29	6.06	0.22	9798
9799	Home Mixed Fertilizer—Formula 1-A-4-44	Simsbury: Cullman Bros., Inc.	5.46	0.23	5.66	5.43	0.35	6.33	0.26	9799
9812	Home Mixed Fertilizer—Formula 1-M-2-44	Simsbury: Cullman Bros., Inc.	5.07	0.16	5.79	5.63	0.39	6.33	0.29	9812
9813	Home Mixed Fertilizer—Formula 1-B-4-44	Simsbury: Cullman Bros., Inc.	5.26	0.23	6.26	6.03	0.29	6.52	0.22	9813
9814	Home Mixed Fertilizer—Formula 1-S-H-44	Simsbury: Cullman Bros., Inc.	5.04	0.27	5.49	5.22	0.39	6.53	0.29	9814
9815	Home Mixed Fertilizer—Formula 1-McC-1-44	Simsbury: Cullman Bros., Inc.	5.05	0.13	6.24	6.11	0.54	6.59	0.41	9815
9816	Home Mixed Fertilizer—Formula 1-A-6-44	Simsbury: Cullman Bros., Inc.	5.66	0.33	4.97	4.64	0.26	6.12	0.20	9816
9817	Potash — Formula 5-10-10—Car #NP 15427 (Berkshire Chemical Co.)	Simsbury: Cullman Bros., Inc.	5.36	0.51	10.71	10.20	0.70	10.41	0.53	9817

TABLE 8. ANALYSES OF SHEEP MANURE, ETC.

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Station No.	Name of Mixture	Sampled or submitted by	Per cent Nitrogen		Per cent Total Phosphoric Acid		Per cent Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
132	Sheep Manure. The American Agricultural Chemical Co., North Weymouth, Mass.	Torrington: F. L. Wadhams & Sons, Inc.	1.84	1.25	2.77	1.00	3.78	3.00	132
9985	Sheep Manure. Apothecaries Hall Co., Waterbury, Conn.	East Windsor: Apothecaries Hall Co.	2.16	1.00	1.50 ¹	4.42	1.00	9985
127	Dricoune. Atkins & Durbrow, Inc., New York, N. Y.	Willimantic: Jordan Hardware Co....	2.88	2.00	3.66 ²	1.90	1.00	127
238	O. K. Manure. Atkins & Durbrow, Inc., New York, N. Y.	Fairfield: Fairfield Grain & Seed Co.	0.80	2.00	1.00	1.00	0.58	1.00	238
21	Berkshire Sheep Manure. The Berkshire Chemical Co., Bridgeport, Conn.	Bridgeport: The Berkshire Chemical Co.	1.98	1.25	2.17	1.00	4.34	2.00	21
3	Corenco Sheep Manure. Consolidated Rendering Co., Boston, Mass.	West Haven: L. T. Frisbie Co.	1.68	1.25	1.50	1.00	3.52	2.00	3
179	Norwood Brand Fertilizer Co., North Reading, Mass.	Bridgeport: Howland's Victory Garden Shop	1.29	1.83	0.88 ³	3.32	1.03	179
121	Wizard Brand Cow Manure. The Pulverized Manure Co., Chicago, Ill.	Stamford: Stumpp & Walter Co.	2.04	2.00	2.58 ⁴	1.55	1.00	121
120	Wizard Brand Pulverized Sheep Manure. The Manure Pulverized Co., Chicago, Ill.	Stamford: Stumpp & Walter Co.	2.70	2.00	2.70 ⁵	2.81	2.00	120
55	Gro-Fast Sheep Manure. The Rogers & Hubbard Co., Portland, Conn.	Portland: The Rogers & Hubbard Co.	1.56	1.25	1.59 ⁶	3.33	2.50	55
117	Sawcoune 2-1-1. Stumpp & Walter Co., New York, N. Y.	Stamford: Stumpp & Walter Co.	2.53	2.00	2.55 ⁷	1.40	1.00	117
118	Sawco Pulverized Sheep Manure. Stumpp & Walter Co., New York, N. Y.	Stamford: Stumpp & Walter Co.	2.70	2.00	2.66 ⁸	2.95	2.00	118
9998	Bovung. Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.	Westville: The Jackson-Marvin Hardware Co.	2.50	2.00	1.50 ⁹	2.33	1.00	9998

¹Guaranteed "available," phosphoric acid, 0.50 per cent; found, 1.35 per cent.²Guaranteed "available," phosphoric acid, 1.00 per cent; found, 3.36 per cent.³Guaranteed "available," phosphoric acid, 0.89 per cent; found, 0.68 per cent.⁴Guaranteed "available," phosphoric acid, 1.00 per cent; found, 2.18 per cent.⁵Guaranteed "available," phosphoric acid, 1.00 per cent; found, 2.46 per cent.⁶Guaranteed "available," phosphoric acid, 1.00 per cent; found, 1.54 per cent.⁷Guaranteed "available," phosphoric acid, 1.00 per cent; found, 2.28 per cent.⁸Guaranteed "available," phosphoric acid, 1.00 per cent; found, 2.50 per cent.⁹Guaranteed "available," phosphoric acid, 1.00 per cent; found, 1.40 per cent.

TABLE 9. ANALYSES OF LIMESTONE AND SIMILAR MATERIALS

Station No.	Manufacturer and Brand	Samples from stock of, or sent by	Chemical analysis				Total oxides, per cent	Mechanical analysis (in percentage)		Station No.
			Per cent lime		Per cent magnesia			20 mesh	100 mesh	
			Found	Guaranteed	Found	Guaranteed				
124 194	Submitted by Station Agent D. U. Smith & Bro., Ashley Falls, Mass. Dolomite Agricultural Limestone. Dolomite Agricultural Limestone.	Storrs: University of Connecticut.... Niantic: Conn. State Farm for Women	30.40	30.00	21.26	21.00	51.66	124
			30.25	30.00	20.75	21.00	51.00	194
9318	Submitted by Purchaser Conklin Limestone Co., Inc., Canaan, Conn. Ground limestone	Hartford: Agricultural Conservation Program	28.01	16.10	44.11	100.0	51.0	9318
46	A. J. Snyder Lime Co., Rosendale, N. Y. Lime	Hartford: Agricultural Conservation Program	46.05	3.01	46
9345	Manufacturer Unknown Land Plaster-Car #CN 473309	Simsbury: Cullman Bros., Inc.	34.43	0.22	34.65	9345
9346	Lee Agricultural Hydrated Lime	Simsbury: Cullman Bros., Inc.	47.24	46.00	31.81	31.00	79.05	9346
9347	Hydrated Lime (High Calcium)	Simsbury: Cullman Bros., Inc.	71.04	70.00	1.19	72.23	9347
9338	Lime-#7	Hartford: A. N. Shepard & Son	46.09	32.01	78.10	9338
9339	Land Plaster-#8	Hartford: A. N. Shepard & Son	33.53	0.39	33.92	9339
9678	Lime	Canaan: Louis R. Col.	38.58	26.37	64.95	9678

¹State purchase.

TABLE 10. ANALYSES OF MISCELLANEOUS MATERIALS

Station No.	Material	Moisture Per cent	Ash Per cent	Organic and Volatile Per cent	Nitrogen Per cent	Phosphoric acid Per cent	Potash Per cent	Remarks
9530	"Lawn dressing"	21.90	16.05	62.05	2.16	0.70	1.59	CaO 11.11%. Material composed of leafy compost (apparently tea leaves) mixed with liming material. No weed seeds detected.
9069	"Lime dust" (Vicinity of magnesium plant, Canaan)	CaO 42.5%; MgO 26.2%; loss on ignition (largely CO ₂) 19.1%; sand dirt 12.2%.
477	Dust (same vicinity as above)	CaO 21.4%; MgO 13.8%.
475	Liquid fertilizer	6.04	10.44	6.91	NO ₃ -N 2.86%; NH ₃ -N 2.10%; urea N 1.00%.
9064	Incinerator ash (Norwalk)	4.12	1.13
9066	Sewage sludge (New Haven)	(air-dry)	48.56	51.44	2.00	1.18	none
9067	Sewage sludge (Hartford)	(air-dry)	52.25	47.75	2.01	1.70
9989	Sewage sludge (Stamford)	13.81	34.94	51.25	2.24	0.85	none
9063	Ash from old automobile tires	0.74	0.51
9894	Fly ash from low-ash coal	none
9215	Tobacco dust	3.80	1.25	3.63	Chlorine 0.75%

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